EPA

Indian Bend Wash
Superfund Site, South Area

U.S. Environmental Protection Agency, San Francisco, CA 94105

Tempe, Arizona *September 1997*

EPA Announces Proposed Plan for Cleanup of Contaminated Groundwater at the IBW-South Site in Tempe

The United States Environmental Protection Agency (EPA) is proposing a remedy to clean up volatile organic compound (VOC) contamination in the groundwater at the Indian Bend Wash-South study area (IBW-South). IBW-South is part of the overall Indian Bend Wash Superfund site and is located primarily in Tempe, AZ (Figure 1). As discussed below, the groundwater cleanup is part of the total site cleanup which also includes soil.

This fact sheet, known as the Proposed Plan, describes the cleanup alternatives analyzed by EPA, identifies EPA's preferred cleanup alternative (No. 4), and explains the rationale for selection of this preferred alternative. EPA's preferred alternative for the groundwater remedy (see Page 9 for details) calls for the following:

- Extraction and treatment of a portion of the VOC-contaminated groundwater;
- Discharge of treated groundwater to either the City of Tempe storm drain system, the Salt River Project's (SRP) Tempe Canal No. 6, or reinjection;
- Monitored natural attenuation of the portions of the VOC-contaminated target volumes not actively pumped and treated;
- Continued monitoring of groundwater to ensure cleanup goals are met; and
- Groundwater use restrictions and well permit requirements to minimize human exposure to contaminated groundwater while cleanup and natural attenuation are occurring.

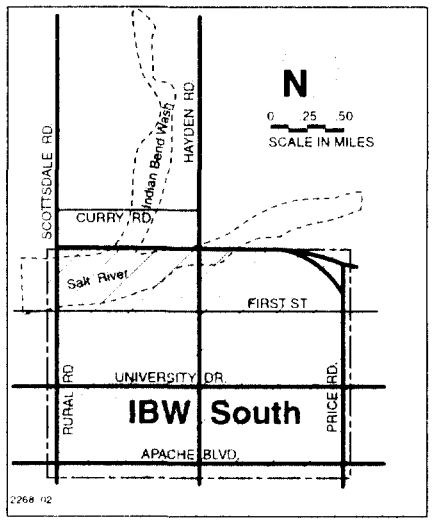

Figure 1
Site Map

EPA's findings concerning IBW-South groundwater are contained in the Final Remedial Investigation (RI) (July 1997) and Groundwater Feasibility Study (FS) (August 1997) reports and other documents contained in the Administrative Record for the IBW-South site. The Administrative record is available in the public libraries listed at the end of this fact sheet. EPA may modify the preferred alternative or may substitute portions or all of other cleanup alternatives presented in this Proposed Plan based on new information or public comments. Therefore, the public is encouraged to review and comment on the RI and FS and all the alternatives identified here. For more details about the meeting, please see Page 12.

EPA will select a final remedy for the site only after the public comment period has ended and all comments have been reviewed and considered. The final remedy will be documented in the Record of Decision (ROD).

Public Meeting

Wednesday, September 24, 1997— 7:00 p.m.
Gililland Middle School, 1025 South Beck Avenue, Tempe, Arizona

The purpose of this meeting is to discuss EPA's proposal, hear concerns and comments, and answer questions about the proposed cleanup activities or any of the alternatives considered. You are encouraged to review all of the cleanup alternatives, including EPA's proposed remedy, and the Administrative Record. Please see the back of this fact sheet for more information on how to comment.

Public Comment Period — September 15 through October 14, 1997

Because this action addresses only the groundwater contamination and not the soil contamination at the site, it is called a groundwater operable unit (OU) remedy. EPA issued an OU remedy to address VOC contamination in the soil at IBW-South in September 1993 (refer to the Site Background section of this fact sheet). When the ROD is issued for the groundwater OU, these two operable unit remedies represent the overall final remedy for the IBW-South area.

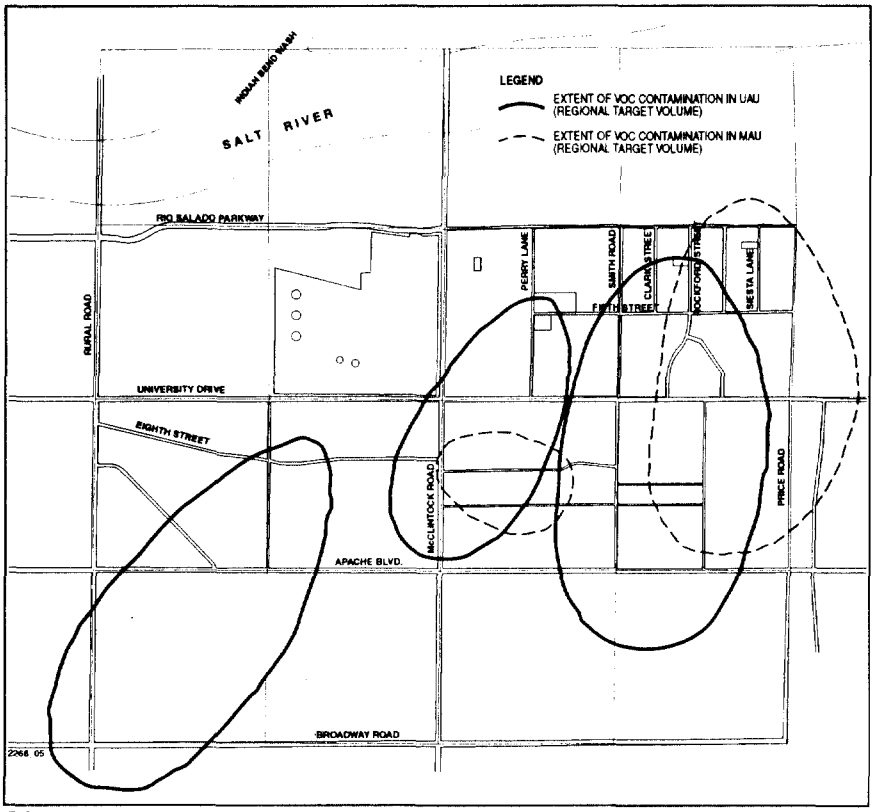

Figure 2
Extent of Contamination and Regional Target Volumes

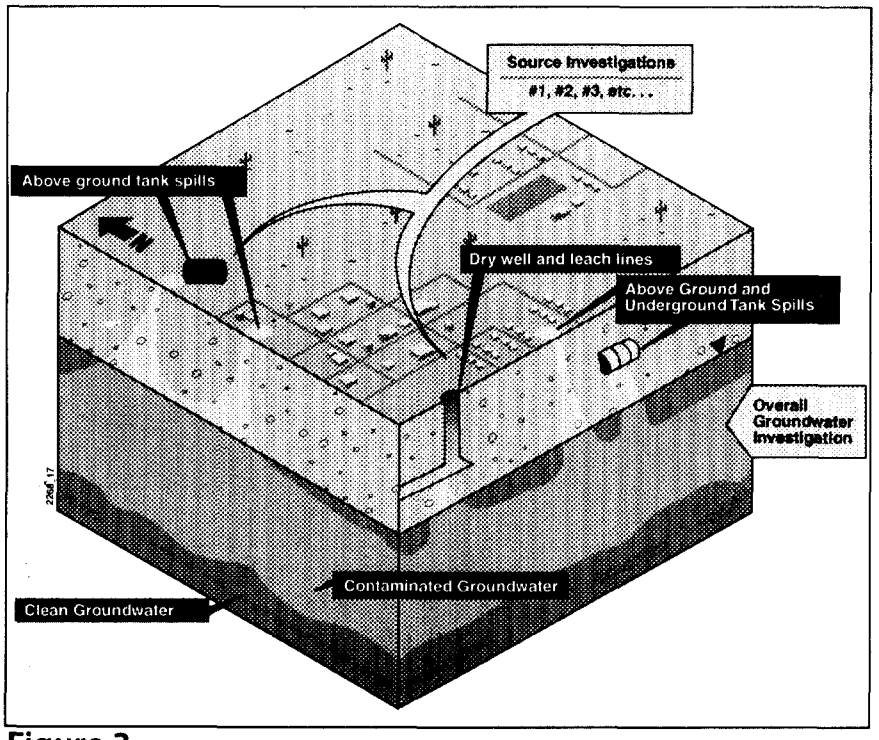

Figure 3
Conceptual Contaminant Transport

Site Background

The Indian Bend Wash Superfund site, including both the North and South study areas covers approximately 13 square miles in Scottsdale and Tempe, AZ. The site includes developed land for residential, commercial and industrial uses. The IBW-South study area extends from the southern edge of IBW-North (roughly just north of the Salt River) to Apache Boulevard (see Figure 1). Although EPA designated these north and south study area boundaries on the basis of information available at the time the site was placed on the Superfund list, these boundaries do not represent the extent of contamination in the study areas. The extent of groundwater contamination presently detected at IBW-South is represented in Figure 2.

VOCs were originally detected in groundwater production wells in the Tempe area in 1982. Since then, EPA has detected VOCs in groundwater production and monitoring wells and in soil at individual properties within the study area. VOCs are a class of organic solvents, such as trichloroethene (TCE), perchloroethene (PCE) also known as tetrachloroethene, and 1,1,1 trichloroethane (1,1,1-TCA), commonly used in manufacturing to degrease parts and in dry cleaning. Some VOCs are believed to increase the risk of cancer and cause other adverse health effects to persons exposed. The primary contaminants of concern at the site are PCE and TCE.

This contamination has moved downward through the soil above the water table and reached groundwater. Once contamination reaches the water table it spreads away from its source and can become a larger regional problem (see Figure 3). **City of Tempe residents receive their water from surface water supplies, not from contaminated groundwater in the IBW-South area.** Nonetheless, contaminated groundwater represents loss of a groundwater resource that is considered a future source of drinking water by the State of Arizona.

The Specific Two-Part Remedial Investigation and Cleanup at IBW-South

The IBW-South area investigations and remedy selections address soil and groundwater as two separate operable units (OUs); these two OUs are described below.

Soil Operable Unit:

The soil source, or vadose zone OU investigation, characterizes the contamination above the groundwater. EPA evaluates a suspect property by performing Preliminary Property Investigations (PPI). Based on information gathered in the PPI, EPA determines whether a Focused Remedial Investigation (Focused RI) is necessary to provide a more detailed study of the soil contamination. Focused RIs have been or are being performed at approximately seven subsites within IBW-South.

The Focused RI work mainly consists of soil investigation work; however, work at some subsites has included the installation of groundwater monitoring wells that have been incorporated into the regional groundwater investigation. Based on the results of the Focused RIs, EPA will determine if soil vapor extraction (SVE) is necessary to prevent the migration of VOCs into the groundwater or into the air. The public is notified when EPA makes this determination. The Administrative Record for the soil OU decision is available in the public repositories discussed on the last page of this fact sheet and is a part of the Administrative Record for the groundwater remedy.

Groundwater Operable Unit:

During the groundwater remedial investigations at IBW-South, EPA encountered three geologic water bearing units (aquifers) underlying the study area (see Figure 4). The three geologic units are the Upper Alluvial Unit (UAU), the Middle Alluvial Unit (MAU), and the Lower Alluvial Unit (LAU). The UAU, in general, has a uniform thickness and is distributed throughout the study area. The UAU is typically found at the ground surface at IBW-South; however, the groundwater in this unit is encountered at approximately 50-60 feet below the ground surface. The UAU consists of clay, sandy silts, sand, gravel, cobbles and boulders.

Underlying the UAU is the MAU, which consists of three subunits, A, B, and C. The A subunit is thin and discontinuous and is not a significant water-bearing formation. The MAU mainly consists of clay and sandy silt with interbedded layers of sand and gravel. The LAU, which underlies the MAU, is mainly composed of cemented gravel, sand, silt, and rock fragments. EPA has not detected contamination in the LAU. For more details on these geologic units please refer to the Remedial Investigation Report (July 1997) available at the repositories listed on the last page.

The UAU is of concern because it is the groundwater bearing unit with the most contamination; this contamination has migrated to groundwater in the MAU. The MAU is of concern because it underlies the UAU and is currently the primary drinking water source aquifer. The MAU is the aquifer in which VOC contamination was first detected.

The direction of groundwater flow in the UAU is mainly to the south and southwest. These flow directions shift to south and southeast when the Salt River is flowing. The direction of groundwater flow in the MAU

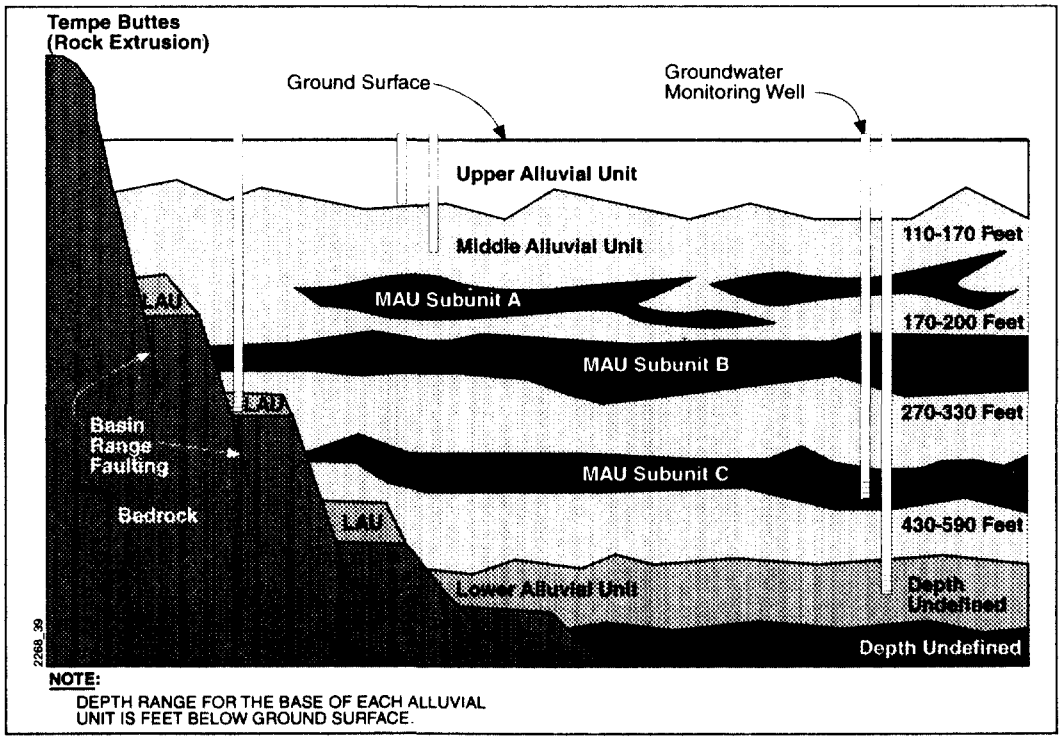

Figure 4
Conceptual Geologic Cross-Section

middle subunit (subunit B) is generally to the east; the groundwater flow in the next lowest MAU subunit (subunit C) varies from north to east, but generally flows northeast.

Over 50 monitoring wells have been installed at IBW-South. Samples have been collected from wells screened in the UAU and the MAU, and groundwater contamination has been evaluated based on the Safe Drinking Water Act Maximum Contaminant Levels (MCLs). MCLs are federal and state standards for drinking water quality. The main VOC contaminants detected in the groundwater are TCE and PCE. The MCLs for both TCE and PCE are 5 micrograms/liter (ug/l).

The RI was conducted over a period of many years, and interim RI reports were published in 1991 and 1993. The final RI, published in 1997, revealed the following information on groundwater contamination at IBW-South:

UAU:

- Groundwater VOC contamination in the UAU is estimated to form approximately three plumes referred to as the western, central, and eastern plumes (see Figure 2).
- Western UAU Plume: The highest levels of VOC contamination have been detected here; mainly TCE contamination was detected as high as 540 ug/l. However, sampling data from 1994 to present have indicated levels of TCE which have ranged from 18 to 89 ug/l. The down gradient southwestern edge (5 ug/l MCL boundary) of this plume is estimated;
- Central UAU Plume: Consists primarily of TCE contamination detected as high as 53 ug/l, but more typically in the range from 3 to 28 ug/l;
- Eastern UAU Plume: Consists primarily of PCE contamination detected as high as 59 ug/l. The down gradient southern edge (5 ug/l MCL boundary) of this plume is estimated.

MAU :

- TCE contamination in the central area of IBW-South with levels up to 7 ug/l within the middle subunit (B) of the MAU;
- TCE contamination in the eastern part of IBW-South with levels ranging from 5 to 12 ug/l has been detected in the lowest subunit (C);
- This TCE contamination may be associated with groundwater movement from the UAU to the MAU, and also with groundwater movement from the UAU to the MAU through SRP Well 23,2.9.

Summary of Groundwater Operable Unit Site Risks

The risk assessment concluded that it is necessary to conduct a cleanup action. VOC contaminated groundwater is not currently used as a drinking water source. Therefore, the risk assessment estimated potential future risks to residents through future residential use of VOC contaminated groundwater. These risks were calculated using sampling data from 63 individual monitoring wells at IBW-South in order to distinguish areas that may require cleanup from areas where the VOC contaminants do not represent unacceptable risks, or where less aggressive cleanup strategies (monitored natural attenuation) could be applied. The risk assessment was performed with the assumption that exposure to VOC contaminated groundwater was possible at any location throughout the groundwater plumes even though groundwater in the vicinity of the IBW-South plumes is not currently used as a drinking water source.

In conducting the risk assessment, EPA used the residential use exposure scenarios to calculate the theoretical excess cancer risk and noncancer adverse health effects due to exposure to contaminants in the groundwater. The theoretical excess cancer risk is an estimation of the probability of developing cancer over and above the normal rate. In addition, EPA evaluated the probability of the increased likelihood of noncancer adverse health effects. EPA evaluated residential exposure pathways such as ingestion, indoor air inhalation, and possible skin contact with contaminated groundwater under future land use scenarios. The indoor air inhalation evaluated exposure during routine household water use, such as showering and dish washing.

Actual or threatened releases of hazardous substances from this site, if not addressed by the preferred alternative or one of the other active measures considered, may present a potential threat to public health,

welfare or the environment. If residents were exposed to TCE and PCE in the groundwater through drinking water or routine household uses, the potential for increased cancer risks and noncancer health effects exists. The risk assessment is published as an appendix to the FS.

Scope and Role of Remedial Action for Groundwater

This proposed cleanup remedy for groundwater will address the VOC contamination in order to protect human health by minimizing future exposure to contaminated groundwater through treatment, continued monitoring, and restricting use of contaminated groundwater until the cleanup goals are met.

EPA's objectives for cleaning up the IBW-South groundwater are the following:

- Protect human health by minimizing the potential for human exposure to groundwater exceeding the cleanup levels(MCLs);
- Cost-effectively reduce contamination in groundwater to meet cleanup levels (MCLs) in order to return groundwater to its beneficial uses to the extent practicable within a reasonable time;
- Protect groundwater resources by preventing or reducing lateral and vertical migration of groundwater contamination above cleanup levels.

MCLs represent one of the applicable or relevant and appropriate requirements (ARARs) which are federal and state requirements which EPA determines must be met during a cleanup action.

Summary of Alternatives

EPA has evaluated the following alternatives for the groundwater at IBW-South. The criteria EPA uses to select the most appropriate remedy are defined in Figure 5. These alternatives are evaluated against seven of the nine criteria and are presented in the FS and this Proposed Plan (see Table 1). Evaluation of remaining two criteria, State acceptance and community acceptance, will be conducted based on comments received during the public comment period. As part of the FS, EPA developed a range of alternatives that treat contaminant source areas, but vary in the degree of treatment used. EPA established two different target volumes (partial and regional) which represent estimated areas of contaminated groundwater which will be contained, pumped and treated as part of the remedial action.

Partial and Regional Target Volumes

Two target volumes were developed and evaluated for IBW-South, regional and partial. The regional target volume represents the volume of water in the UAU and MAU plumes which is contaminated with VOCs above the TCE and PCE MCLs. The partial target volume represents a smaller area of the VOC contaminated groundwater in the UAU which contains the highest levels of VOC contamination which would be contained, extracted and treated during the remedial action. The partial target volume was developed to include alternatives which could meet cleanup levels (MCLs) within a reasonable time period (less than 100 years) and at a reduced cost, while relying on monitored natural attenuation processes to meet MCLs in the less contaminated areas of the IBW-South site within a reasonable time frame. The partial target volume represents all of the western UAU plume (VOC concentrations above MCLs) and portions of the central and eastern UAU plumes where VOC concentrations are above 20-30 ug/l.

As part of the FS, groundwater modeling was conducted to estimate the distances contaminated groundwater in the UAU and MAU plumes would travel over time before meeting MCLs under various remedial alternatives. EPA used this modeling to estimate the partial target volume that would meet MCLs within a reasonable time frame when combined with natural attenuation processes. The partial target volumes and regional target volumes are estimates based on site data; EPA will perform additional work during the remedial design phase to further refine these target volumes. The groundwater modeling also formed the basis of EPA's estimates of the times it would take for the remedial alternatives described below.

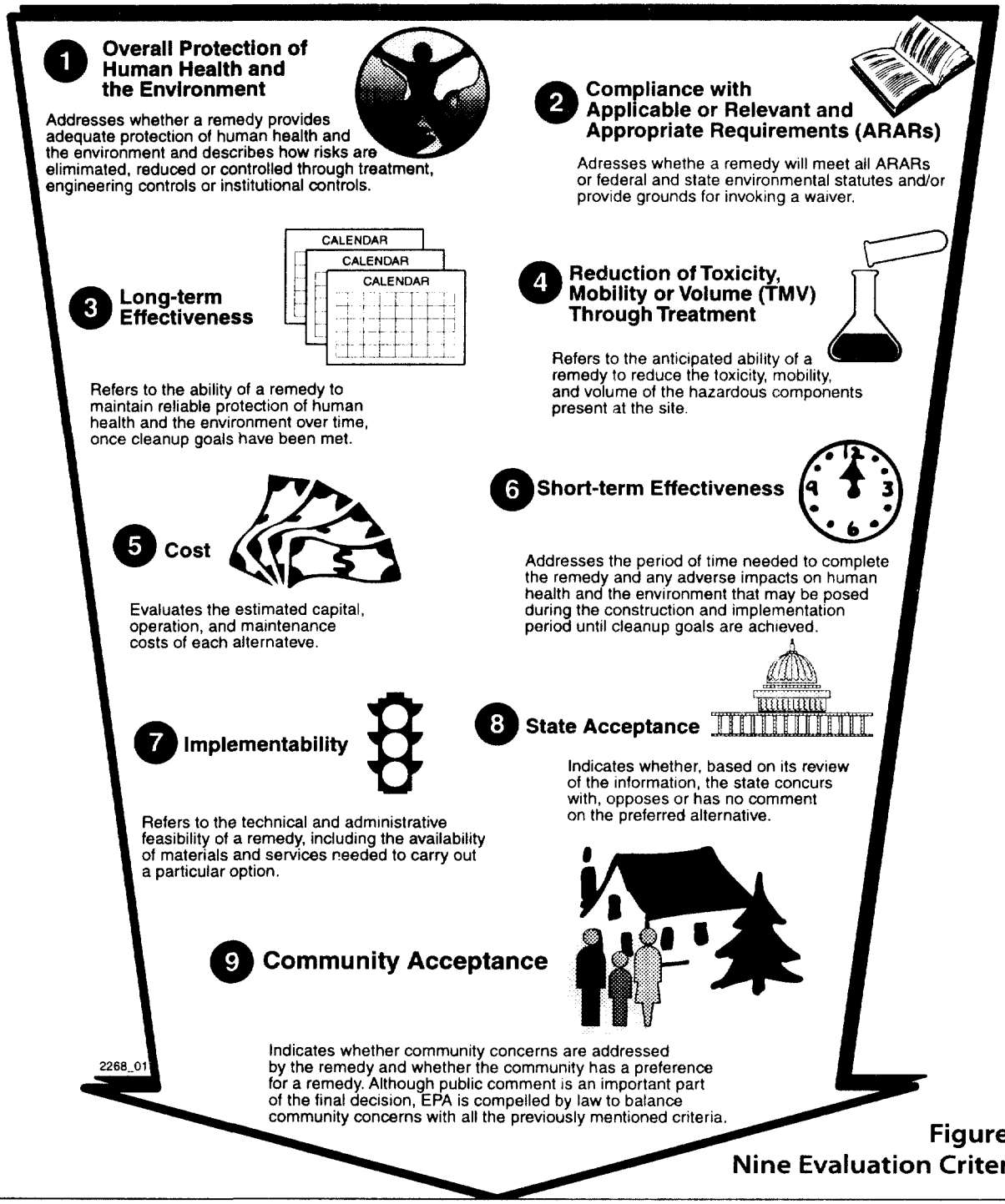

Figure 5
Nine Evaluation Criteria

- **Alternative 1:** No Action
- **Alternative 2:** Monitored Natural Attenuation
- **Alternative 3:** Limited Action-Wellhead Treatment at COT No.7/COT Potable Water
- **Alternative 4:** Partial Containment/Treatment/ Discharge to City of Tempe Storm Drain or SRP Tempe Canal No. 6 or Reinjection/Monitored Natural Attenuation
- **Alternative 5:** Regional Containment/Treatment/ Discharge to SRP Tempe Canal No. 6 or City of Tempe Storm Drain
- **Alternative 6:** Regional Containment/Treatment/ Reinjection to MAU aquifer

Common Elements

Except for the "No Action" and "Monitored Natural Attenuation" alternatives, all of the alternatives now being considered for the site would include a number of common components. Alternatives 3 through 6 include extracting a certain amount of the contaminated groundwater; air stripping to remove the VOCs from the groundwater into an air stream followed by treatment of the airstream or off-gas with vapor granulated activated carbon (VGAC) (see Figure 6); groundwater monitoring to assess the effectiveness of cleanup action; and groundwater use restrictions and well permitting requirements to limit human exposure to contaminated groundwater during the cleanup implementation. These alternatives vary in the volume of the contaminated groundwater which will be actively extracted and treated and the end use of the treated groundwater.

The Remedial Design (RD) phase will follow release of the groundwater Record of Decision (ROD). Regardless of the remedy selected, EPA will seal well SRP23E, 2.9N to eliminate this path of VOC contaminant migration from the UAU to the MAU.

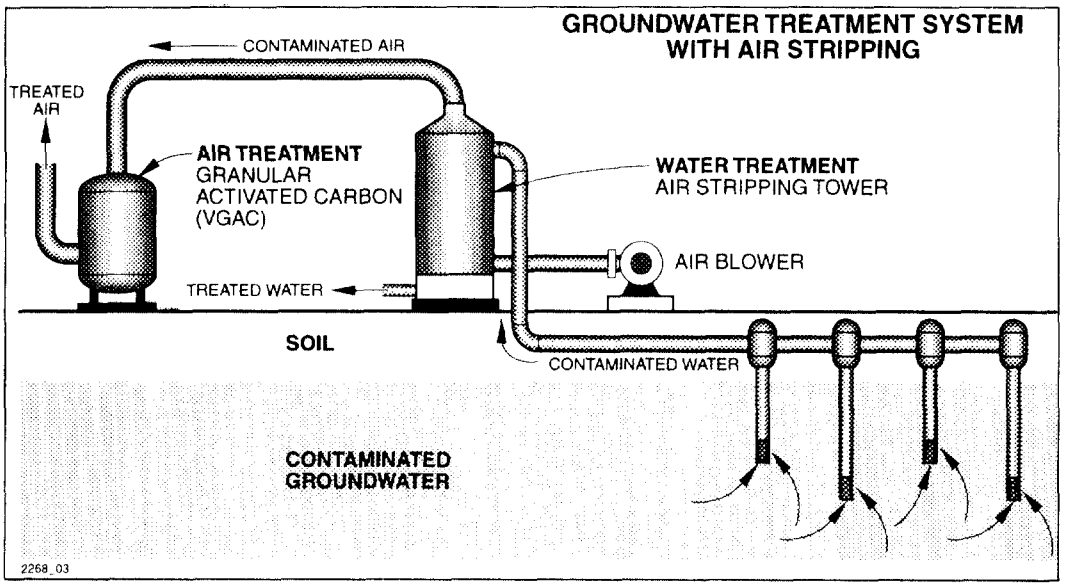

Figure 6
Groundwater Treatment System with Air Stripping

Detailed Description of Alternatives

Alternative 1: No Action

- No Action
- Capital Costs: 0
- Annual Operation and Maintenance (O & M) Costs: 0
- Present Worth Costs (30 year): 0

The Superfund program requires that the "no action" alternative be evaluated at every site to establish a baseline for comparing other alternatives. Under this alternative, EPA would take no further action at the site to prevent exposure to the groundwater contamination.

This alternative is not protective of human health and the environment because VOC contaminants above MCLs would remain in the groundwater and could migrate to affect other areas of the UAU and MAU aquifers; and without restrictions on groundwater use the public could be exposed to contaminated water.

Natural attenuation processes may occur, but it is not likely that contaminant levels would decrease to meet MCLs within a reasonable time period of 100 years, and without monitoring of groundwater there would be no way to determine if MCLs would be met.

Alternative 2: Monitored Natural Attenuation

- Capital Cost: $890,000
- Annual O & M Costs: $110,000
- Present Worth Costs(30 year.): $2,580,000

In this alternative, all of the contamination in the groundwater is reduced by naturally occurring physical, chemical, and biological processes such as dilution, volatilization, or biological breakdown of compounds by microorganisms. Groundwater monitoring is conducted to observe the distribution of contamination and to evaluate the rate of cleanup resulting from natural attenuation processes. Well permit

requirements and groundwater use restrictions are enforced to minimize human health exposure to contaminated groundwater while natural attenuation is taking place.

This alternative would allow contaminants to migrate in the aquifer until natural attenuation processes reduced the levels of VOCs to meet cleanup levels. Although biological breakdown of VOCs by microorganisms has not been demonstrated at IBW-South, other natural attenuation processes may be relied upon in areas of low concentrations. This remedy is not protective since natural attenuation alone will not meet MCL cleanup levels within a reasonable time frame and the plume would migrate a significant distance. For example, the western UAU plume would migrate a significant distance (greater than 7,000 feet) further contaminating clean aquifer areas, and cleanup levels throughout the plume would not be reached in a reasonable period of time (less than 100 years).

Alternative 3: Limited Action: Wellhead Treatment at COT No. 7/COT Potable Water

- Capital Costs: $1,240,000
- Annual O & M Costs: $440,000
- Present Worth Costs(30 year.): $8,000,000

The objective of this alternative is to allow the City of Tempe to use No.7 (see Figure 7 for well location) to provide water that meets drinking water standards for use in emergencies or as backup during drought conditions. It does not address the overall groundwater contamination, but provides protection of human health by treatment at the wellhead prior to distribution to the public. Containment of the groundwater contamination plume is not directly addressed. Groundwater monitoring is conducted to observe the distribution of contamination and to evaluate the rate of cleanup resulting from natural attenuation processes. Well permit requirements and groundwater use restrictions are enforced to minimize human health exposure to contaminated groundwater while natural attenuation is taking place.

Groundwater is extracted through COT No.7. VOCs are removed from the groundwater through air stripping into an airstream (offgas); offgas generated from the air stripping is treated using granulated activated carbon (see Figure 6). Routine monitoring of the groundwater before and after treatment is performed to assess operational conditions and to ensure that cleanup goals are achieved.

This remedy is not protective since the groundwater contamination within the UAU would be allowed to migrate a significant distance and cleanup goals (MCLs) will not be met within a reasonable time frame.

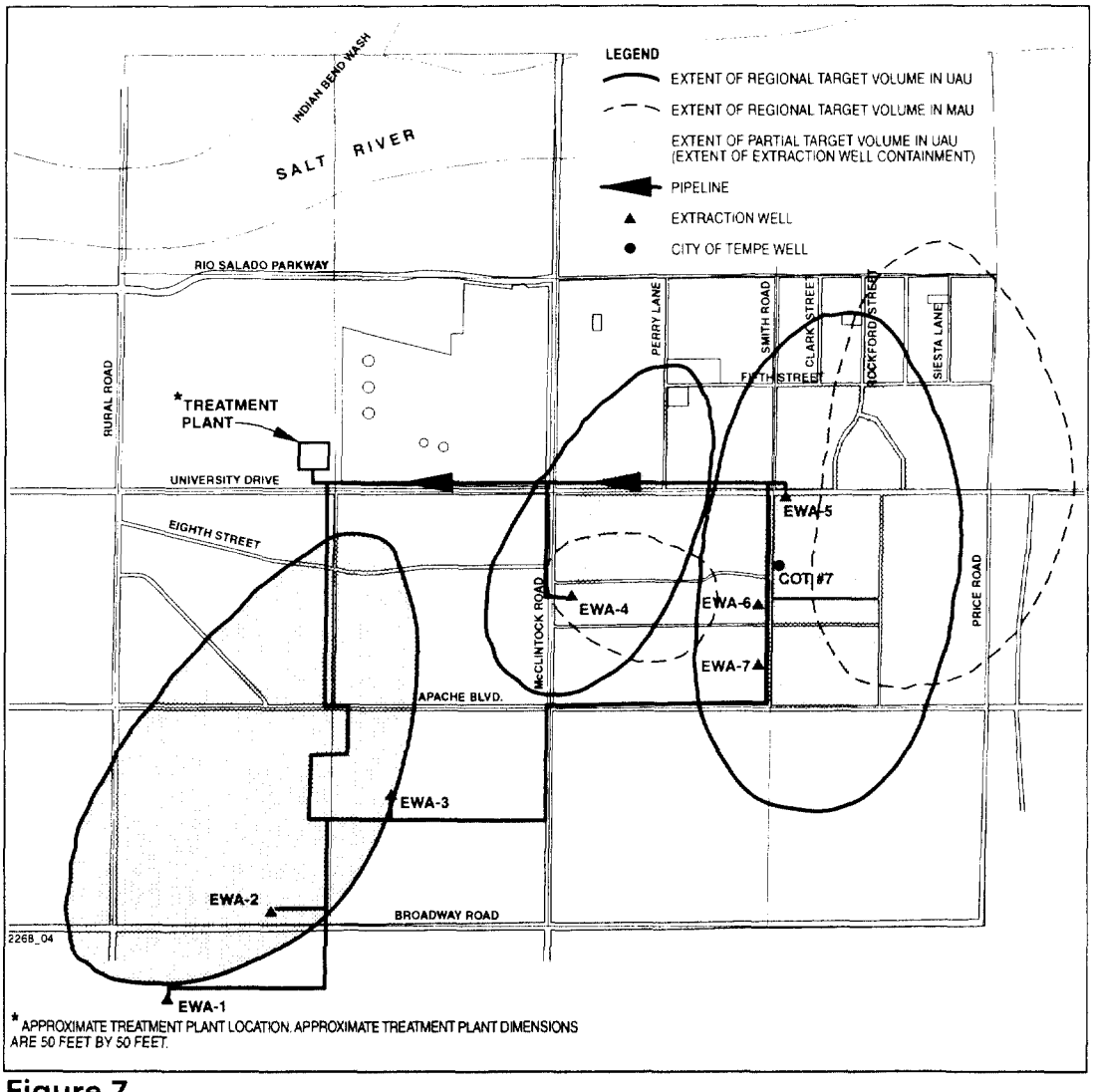

Figure 7
Alternative 4

EPA's Preferred Alternative

Alternative 4: Partial Containment: Extraction/Treatment Plant Air Stripping/Discharge to City of Tempe Storm Drain/Monitored Natural Attenuation*

- Capital Costs: $8,320,000
- Annual O& M Costs:$1,300,000
- Present Worth Costs(30 year): $ 28,300,000

*EPA may interchange options for the end use of the treated water for alternatives 4 through 6. Costs for the various options for discharge of treated water are estimated in the FS.

This alternative includes extraction of a partial target volume, which is defined as the area of highest VOC contaminated groundwater from the UAU aquifer in the central and eastern plumes where concentrations are approximately above 20-30 ug/L, and the entire western UAU plume where VOCs are above MCLs (see Figure 7 for target volumes). The partial target volume was developed to establish a volume of water which is less than the regional target volume (defined as groundwater in which VOC concentrations are above the MCLs) which when pumped and treated and combined with natural attenuation of the remaining portions of the regional target volume would meet cleanup levels within a reasonable time frame. The partial target volume is established based on extracting the highest levels of contamination in the UAU and performing groundwater modeling to determine if this volume is sufficient to ensure that groundwater MCLs will be met within a reasonable time frame (less than 100 years) without migrating a far distance before cleanup levels are met.

The extracted groundwater within the partial target volume is piped to a centralized treatment system and the VOCs are removed from the groundwater by air stripping. VOC-contaminated offgas from air stripping is treated by using vapor granulated activated carbon vessels. The treated water would then be delivered to the City of Tempe storm drain system, the Salt River Project's Tempe Canal No. 6, or reinjection to the MAU aquifer. The exact end use for the treated groundwater will be determined after EPA has considered all comments received on this proposed plan and performed remedial design work for the remedy.

Routine monitoring of the groundwater before and after treatment would be conducted to assess operational conditions and ensure cleanup goals are met. The portion of the plume outside of the partial target volume in the UAU which is not actively pumped and treated and the MAU aquifer would migrate a short distance and naturally attenuate to MCLs within a reasonable time period. EPA has conducted modeling to determine how far portions of the VOC-contaminated plumes not treated by air stripping could migrate before reaching cleanup goals through natural attenuation processes. The results are as follows:

- Western UAU plume: Is fully contained, pumped and treated and therefore does not migrate;
- Central UAU plume: Migrates less than 2,000 feet before meeting MCLs throughout the plume within 50 years;
- Eastern UAU plume: Migrates approximately 2,000 feet before meeting MCLs throughout the plume in 30-50 years;
- MAU Plume (subunits B and C): Migrates less than 2,000 feet before meeting MCLs throughout the plume in 30-50 years.

Newly installed wells, in addition to existing monitoring wells, are sampled to monitor the progress of the decreases in VOC concentrations during the natural attenuation process to ensure that cleanup levels are met. Well permit requirements and groundwater use restrictions are enforced to minimize human health exposure to contaminated groundwater while cleanup and natural attenuation are occurring.

EPA believes that this preferred remedy satisfies the statutory requirements of the Superfund law and best satisfies the evaluation criteria (see Figure 5). The preferred remedy is protective of human health and the environment; and cleanup levels and other ARARs will be met within a reasonable time period of 30 to 50 years either through active pumping and treating of the groundwater or through monitored natural attenuation processes. This remedy is the most cost-effective remedy for obtaining these remediation goals because a smaller volume of water is actively pumped, treated, and disposed of.

Evaluation Criteria	Alternative 1	Alternative 2	Alternative 3
Alternative Description	No-Action	Natural Attenuation: Well Permit Requirements/Groundwater Use Restrictions/ Groundwater and Verification Monitoring	Limited Action: Wellhead Treatment at COT No. 7/COT Potable Water: Well Permit Requirements/Groundwater use Restrictions/ Groundwater Monitoring
Overall Protection of Human Health and the Environment	No	No; MCL levels will not be met in the UAU in a reasonable time frame.	No; drinking water from COT No. 7 would be protective, but plume will migrate and will not be monitored.
Compliance with ARARs	No	No; MCL levels will not be met in the UAU in a reasonable time frame.	No; same as Alternative 2.
Long-Term Effectiveness and Permanence	No; does not reduce long-term risk.	No; same as Alternative 1.	No; same as Alternative 1.
Reduction of Toxicity, Mobility, or Volume Through Treatment	None	None	Yes; very little reduction of toxicity, mobility, or volume when treatment occurs at COT No. 7.
Short-Term Effectiveness	Not applicable.	Construction related risks can be minimized.	Same as Alternative 2.
Implementability	Not applicable.	Yes; equipment and services are readily available.	Yes; the treatment technology is proven, reliable and readily available.
Cost			
Capital Cost	$0	$890,000	1,240,000
Annual O&M Cost	$0	$110,000	$440,000
30-Year Present Worth	$0	$13,950,000	$8,000,000

Options for disposal of treated groundwater to the City of Tempe and the Salt River Project Tempe Canal No. 6 are similar in cost. If reinjection is chosen for the treated groundwater discharge, it is more expensive than the other discharge options. Implementation of these options will require further coordination with various Arizona state agencies, including the Arizona Departments of Environmental Quality (ADEQ) and Water Resources (ADWR) , as well as the City of Tempe (COT) and the Salt River Project (SRP). EPA will make a determination during the remedial design phase on which end use option will be used.

Alternative 5: Regional Containment: Extraction Wells/ Treatment Plant Air Stripping/ Discharge to SRP Tempe Canal No. 6

- Capital Costs:$12,600,000
- Annual O & M Costs:$1,540,000
- Present Worth Costs (30 year) :$36,270,000

This alternative includes extraction of the regional VOC groundwater plume which includes all of the UAU and MAU aquifers with TCE and PCE above MCLs (see Figure 2). As with Alternative 4, the extracted groundwater is piped to a centralized treatment system, and the VOCs are removed from the groundwater by air stripping. VOC contaminated offgas from air stripping is treated by using vapor granulated activated carbon vessels. The treated groundwater is then delivered to the SRP's Tempe Canal No. 6 or City of Tempe storm drain system for possible use in Town Lake. Newly installed wells, in addition to existing monitoring wells, are sampled to monitor the progress of the decrease in VOC concentrations. Well permit requirements and groundwater use restrictions are enforced to minimize human health exposure to contaminated groundwater while cleanup of the plumes is occurring.

This alternative, as well as Alternative 6, offers the best overall protection to human health and the environment because all of the VOC contaminated groundwater at levels above MCLs will be contained, pumped

Alternative 4 (EPA's Preferred Remedy)	Alternative 5	Alternative 6
Partial Containment/Treatment/ COT Storm Drain/Natural Attenuation Well Permit Requirements/Groundwater Use Restrictions/ Groundwater and Verification Monitoring	Regional Containment/Treatment/ Tempe Canal No. 6 Well Permit Requirements/ Groundwater Use Restrictions/ Groundwater Monitoring	Regional Containment/Treatment/ Reinjection MAU Aquifer Reinjection/Well Permit Requirements/Groundwater Use Restrictions/ Groundwater Monitoring
Yes; groundwater use restriction will be enforced throughout contaminated area until MCLs are met.	Same as Alternative 4.	Same as Alternative 4.
Yes	Yes	Yes
Yes; long-term risks are greatly reduced.	Same as Alternative 4.	Same as Alternative 4.
Yes; toxicity and volume are greatly reduced throughout the contaminated area. Mobility is greatly reduced in the area of highest contamination.	Yes; toxicity, mobility, or volume throughout contaminated area.	Same as Alternative 5.
Additional short-term risks from construction of treatment plant and piping.	Short-term risk greater than Alternative 4 resulting from larger treatment plant and more piping.	Same as Alternative 5.
Yes; the treatment technology is proven, reliable and readily available. Installation of pipeline may be difficult due to existing conditions.	Yes; the treatment technology is proven, reliable and readily available. Pipeline is more extensive and will result in greater construction impacts.	Same as Alternative 5.
$8,320,000 $1,300,000 $28,300,000	$12,600,000 $1,540,000 $36,270,000	$21,260,000 $1,800,000 $48,930,000

and treated. All cleanup goals are expected to be met without expansion of the UAU and MAU plumes within an estimated 30 to 50 years. However, costs for this remedy and Alternative 6 are significantly higher than those of EPA's preferred Alternative 4.

Alternative 6: Regional Containment: Extraction Wells/ Treatment Plant Air Stripping/ Aquifer Reinjection

- Capital Costs: $21,260,000
- Annual O & M Costs: $1,800,000
- Present Worth Costs (30 year): $48,930,000

This alternative has the same components as Alternative 5 except the treated water is injected back into the MAU aquifer. Although this alternative extracts and treats the same volume of groundwater as Alternative 5, it is more expensive due to the additional costs of installing and maintaining numerous deep wells and transporting the treated water to these wells for reinjection.

This alternative is protective of human health and the environment, and cleanup levels are expected to be met in a reasonable time frame of 30-50 years; however, the costs for this remedy are significantly higher than the other alternatives (4 and 5) which are similar in protectiveness and in meeting cleanup levels.

In summary, Alternative 4 is the preferred remedy because it is protective of human health and the environment, will meet ARARS while using permanent treatment solutions to address the contamination in the groundwater at IBW-South, and is the most cost effective remedy for meeting the cleanup levels within a reasonable time frame.

Opportunities for Community Involvement

Information Repositories

A complete copy (microfilm) of the IBW-South Groundwater Administrative Record File, including the Remedial Investigation and Feasibility Study Reports and other study-related documents, is available for public review at the Tempe and Scottsdale Public Libraries and EPA's Records Center in San Francisco. If you have any questions, please contact Vicki Rosen at (415) 744-2187 or toll free (800) 231-3075.

Tempe Public Library
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(602) 350-5511

Scottsdale Public Library
3838 Civic Center Plaza
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Community Meeting, Verbal, and Written Comments

Public Meeting
Wednesday, September 24, 1997, at 7 p.m.
Gililland Middle School
1025 South Beck Avenue, Tempe, AZ

EPA encourages comments on all alternatives considered. The public comment period for verbal and written responses to the Proposed Plan for cleanup of VOC contaminated groundwater of the Indian Bend Wash-South Superfund site **is from September 15 to October 14, 1997**. EPA will hold a public meeting on Wednesday, September 24, 1997 at 7:00 p.m. in the Gililland Middle School to present its Proposed Plan, respond to questions and receive comments either orally or in writing. Otherwise, written comments, postmarked no later than October 14, 1997 should be sent to:

Roberta Riccio
Remedial Project Manager
U.S. Environmental Protection Agency
75 Hawthorne Street (SFD-7-1)
San Francisco, CA 94105

Questions and Concerns

If you have any questions about the site, want to add a name to our mailing list, or would like more information on the IBW-South and North Superfund site, please contact:

Remedial Project Manager, IBW South
Roberta Riccio (SFD-7-1)
(415) 744-2369

Community Involvement Coordinator
Vicki Rosen (SFD-3)
(415) 744-2187

EPA Media Contact
Lois Grunwald (CGR-2)
(415) 744-1588

IBW North Contact
Emily Roth (SFD-7-1)
(415) 744-2247

U.S. EPA, 75 Hawthorne St.,
San Francisco, CA 94105

Messages may be left for any of the above staff Toll Free at:
(800) 231-3075

United States Environmental Protection Agency
Region 9
75 Hawthorne Street (SFD-3)
San Francisco, CA 94105
Attn.: Vicki Rosen

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